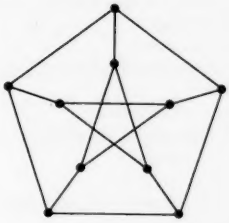
Journal of Graph Theory



Volume 6

1982

Frank Harary
Founder-Editor

Ralph J. Faudree
Richard H. Schelp
Managing Editors

A Wiley-Interscience Publication
John Wiley & Sons, Inc.
New York Chichester Brisbane Toronto Singapore

ASSOCIATE EDITORS

Allen J. Schwenk
Department of Combinatorics and Optimization
University of Waterloo
Waterloo, Ontario, Canada N2L 361

Carsten Thomassen
Mathematics Institute Bygn. 303
The Technical University of Denmark
2800 Lyngby, Denmark

EDITORIAL BOARD

Jin Akiyama, Nippon Ika University
Lowell W. Beineke, Purdue University
Jean-Claude Bermond, Université de Paris—Sud
Frank Boesch, Stevens Institute of Technology
Béla Bollobás, Cambridge University
J. Adrian Bondy, Simon Fraser University
Gary Chartrand, Western Michigan University
Fan R. K. Chung, Bell Laboratories
D. M. Cvetković, University of Belgrade
Paul Erdös,* Budapest
Roberto Frucht,* Santa Maria University
Martin Gardner,* Hendersonville, North Carolina
Ronald L. Graham, Bell Laboratories
Piet W. Kasteleyn, University of Leiden
Linda Lesniak-Foster, Western Michigan University
László Lovász, Bolyai Intezete
Karl Menger,* Illinois Institute of Technology
C. St. J. A. Nash-Williams, University of Reading
E. M. Palmer, Michigan State University
George Pólya,* Stanford University
Gerhard Ringel, University of California—Santa Cruz
R. W. Robinson, Southern Illinois University
Hoon-Heng Teh, National University of Singapore
W. T. Tutte, University of Waterloo
Arthur T. White, Western Michigan University

* *Honorary member.*

Mary Curtis Publisher
Ed Barnas Supervising Editor
Allan Ross Production Editor
Esther Gilbert Production Manager
Juan Astudillo Subscription Manager

Journal of Graph Theory (ISSN: 0364-9024) is published quarterly, one volume per year, by John Wiley & Sons, Inc. Copyright © 1982 by John Wiley & Sons, Inc., 605 Third Ave., New York, New York 10158. All rights reserved. Reproduction or translation of any part of this work beyond that permitted by Sections 107 and 108 of the United States Copyright Law without the permission of the copyright owner is unlawful. Second-class postage paid at New York, New York and at additional mailing offices.

The code and copyright notice appearing at the bottom of the first page of an article in this journal indicate the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients, on the condition that the copier pay for copying beyond that permitted by Sections 107 and 108 of the U.S. Copyright Law. The per-copy fee for each article appears after the dollar sign and is to be paid through the Copyright Clearance Center, Inc., 21 Congress St., Salem MA 01970. (The fee for articles published prior to 1978 is $1.00 per article.) This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Such permission requests and other permission inquiries should be addressed to the publisher.

The contents of this journal are indexed by *Bulletin of the International Network for Social Network Analysis*, *Computers and Control Abstracts*, *CompuMath*, *Computing Reviews*, *Current Contents/Physical, Chemical and Earth Sciences*, *Electrical and Electronic Abstracts*, *Mathematical Reviews*, and *Science Citation Index*.

Subscription price (1983): $75.00 per volume. Postage and handling outside U.S.A.: $12.00 by surface; $44.00 by air. Please allow four weeks for processing of a change of address. Claims for undelivered copies must be made no later than three months following the month of publication. Missing copies will be supplied when losses have been sustained in transit and where reserve stock will permit.

Journal of Graph Theory

Contents of Volume 6, 1982

Number 1, Spring 1982

Cages—A Survey 1
P. K. Wong

Domination-Balanced Graphs 23
C. Payan, N. H. Xuong

Edge-Reconstruction of 4-Connected Planar Graphs 33
S. Fiorini, J. Lauri

Exceptional Trivalent Cayley Graphs for Dihedral Groups 43
D. L. Powers

Constructions of Covering Triangulations with Folds 57
A. Bouchet

On One-Factorizations of Compositions of Graphs 75
P. Himelwright, W. D. Wallis, J. E. Williamson

Note on the Reconstruction of Infinite Graphs with a Fixed Finite Number of Components 81
T. Andreae

Harmonious Labelings of Windmill Graphs and Related Graphs 85
D. F. Hsu

Counterexamples to Randić's Conjecture on Distance Degree Sequences for Trees 89
P. J. Slater

Erratum

On the Edge-Colorings Problem For a Class of 4-Regular Maps 93
F. Jaeger, H. Shank

Forthcoming Articles 95

Number 2, Summer 1982

Homage to Roberto Frucht 97
F. Harary

How I Became Interested in Graphs and Groups 101
R. W. Frucht

On Maximum Bipartite Subgraphs 105
G. Malle

Extremal Bipartite Subgraphs of Cubic Triangle-Free Graphs 115
G. Hopkins, W. Staton

Maximum k-Colorable Subgraphs 123
S. C. Locke

On Digraphs without Antidirected Cycles 133
D. D. Grant, F. Jaeger, C. Payan

On a Conjecture of Bollobás and Bosák 139
Š. Znám

Vertices of Given Degree in a Random Graph 147
B. Bollobás

A Class of Geodetic Blocks 157
R. J. Cook, D. G. Pryce

A Shortness Exponent for r-Regular r-Connected Graphs 169
B. Jackson, T. D. Parsons

On the Toroidal Thickness of Graphs 177
I. Anderson

Every Simple 3-Polytope of Order 32 or Less is Hamiltonian 185
H. Okamura

The Connectivities of Line and Total Graphs 197
D. Bauer, R. Tindell

A Counterexample to a Conjecture on Paths of Bounded Length 205
S. M. Boyles, G. Exoo

Some Graphs with Characteristic Polynomials which are not Solvable by Radicals 211
C. D. Godsil

Graphs with Nilpotent Adjacency Matrices 215
M. W. Liebeck

Cubic Graphs with Three Hamiltonian Cycles are not Always Uniquely Edge Colorable 219
A. Thomason

Number 3, Fall 1982

The Bandwidth Problem for Graphs and Matrices—A Survey 223
P. Z. Chinn, J. Chvátalová, A. K. Dewdney, N. E. Gibbs

4-Valent Graphs 255
T. C. Enns

Distribution of Points by Degree and Orbit Size in a Large Random Tree 283
C. K. Bailey

The Maximum Number of Arc-Disjoint Arborescences in a Tournament 295
M. Chung-fan, C. Mao-cheng

The Number of Tournaments with a Unique Spanning Cycle 303
J. W. Moon

A Relationship between Triangulated Graphs, Comparability Graphs, Proper Interval Graphs, Proper Circular-Arc Graphs, and Nested Interval Graphs 309
D. J. Skrien

Atoll Decompositions of Graphs 317
F. Buckley

Orientations of Circle Graphs 325
R. C. Read, D. Rotem, J. Urrutia

Uncontractable 4-Connected Graphs 343
N. Martinov

On the Berge–Sauer Conjecture 345
K. R. Parthasarathy, S. Sridharan

Number 4, Winter 1982

A Review of Random Graphs 349
M. Karonski

Nonorientable Genus of Cartesian Products of Regular Graphs 391
T. Pisanski

More Rotation Numbers for Complete Bipartite Graphs 403
B. Bollobas, E. J. Cockayne

Bounds for the Ramsey Number of a Disconnected Graph Versus Any Graph
R. J. Gould, M. S. Jacobson 413

Topological Subgraphs of Cubic Graphs and a Theorem of Dirac 419
R. Statman

Bipartite Graphs with Cycles of All Even Lengths 429
E. Schmeichel, J. Mitchem

A 1-Factorization of the Line Graphs of Complete Graphs 441
B. Alspach

A New 5-Arc-Transitive Cubic Graph 447
N. L. Biggs

Mean Distance for Shapes 453
J. K. Doyle, J. E. Graver

Cyclically 5-Edge-Connected Cubic Planar Graphs and Shortness Coefficients 473
P. J. Owens

Randomly Antitraceable Digraphs 481
J. F. Fink

A Sufficient Condition for a Graph to Contain Three Disjoint 1-Factors 489
S. Win

On the Decomposition of K_n into Complete Bipartite Graphs 493
H. Tverberg

Research Announcement

A Cubic 3-Connected Graph Having No Cycle Through Given 10 Vertices has the "Petersen Form" 495
A. K. Kelmans, M. V. Lomonosov
Author Index 497
Information for Contributors 499
Volume Title Page i
Volume Contents iii